


**www.phoronix-test-suite.com**

# 8700K December

Intel Core i7-8700K testing with a ASUS TUF Z370-PLUS GAMING (2001 BIOS) and ASUS Intel UHD 630 CFL GT2 3GB on Ubuntu 20.04 via the Phoronix Test Suite.

**Automated Executive Summary**

*A had the most wins, coming in first place for 32% of the tests.*

*Based on the geometric mean of all complete results, the fastest (B) was 1.002x the speed of the slowest (A). C was 0.999x the speed of B, D was 1x the speed of C, A was 1x the speed of D.*

*The results with the greatest spread from best to worst included:*

*Apache CouchDB (Bulk Size: 100 - Inserts: 1000 - Rounds: 24) at 1.059x*
*GnuPG (2.7GB Sample File Encryption) at 1.039x*
*rav1e (Speed: 1) at 1.038x*
*7-Zip Compression (Test: Compression Rating) at 1.03x*
*rav1e (Speed: 6) at 1.022x*
*rav1e (Speed: 5) at 1.02x*
*JPEG XL libjxl (Input: JPEG - Encode Speed: 7) at 1.016x*
*JPEG XL Decoding libjxl (CPU Threads: 1) at 1.014x*
*rav1e (Speed: 10) at 1.013x*

*JPEG XL libjxl (Input: PNG - Encode Speed: 8) at 1.013x.*

# Test Systems:

## A

## B

## C

## D

Processor: Intel Core i7-8700K @ 4.70GHz (6 Cores / 12 Threads), Motherboard: ASUS TUF Z370-PLUS GAMING (2001 BIOS), Chipset: Intel 8th Gen Core, Memory: 16GB, Disk: 128GB Toshiba THNSN5128GPU7, Graphics: ASUS Intel UHD 630 CFL GT2 3GB (1200MHz), Audio: Realtek ALC887-VD, Monitor: VA2431, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc6daily20200923-generic (x86_64) 20200922, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.9, OpenGL: 4.6 Mesa 20.0.8, OpenCL: OpenCL 2.1, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave (EPP: balance_performance) - CPU Microcode: 0xea - Thermald 1.9.1
Python Notes: Python 2.7.18 + Python 3.8.10
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Mitigation of Clear buffers; SMT vulnerable

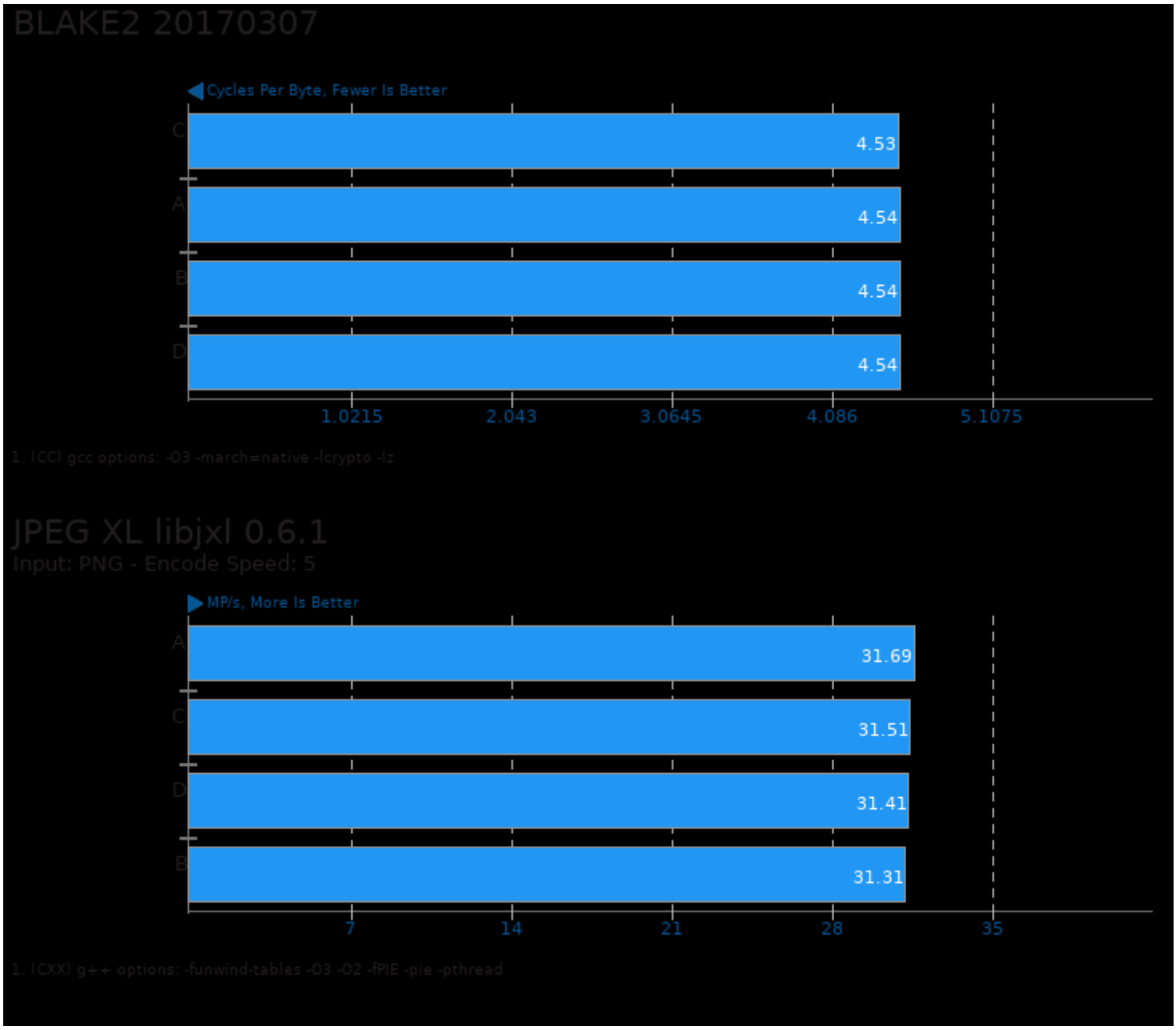
| | A | B | C | D |
|---|---|---|---|---|
| **BLAKE2 (Cycles/Byte)** | **4.54** | **4.54** | **4.53** | **4.54** |
| **Normalized** | 99.78% | 99.78% | 100% | 99.78% |
| **JPEG XL libjxl - PNG - 5 (MP/s)** | **31.69** | **31.31** | 31.51 | 31.41 |
| **Normalized** | 100% | 98.8% | 99.43% | 99.12% |
| **JPEG XL libjxl - PNG - 7 (MP/s)** | **8.05** | 8.04 | **8.02** | **8.05** |
| **Normalized** | 100% | 99.88% | 99.63% | 100% |
| **JPEG XL libjxl - PNG - 8 (MP/s)** | **0.8** | **0.81** | **0.81** | **0.81** |
| **Normalized** | 98.77% | 100% | 100% | 100% |
| **JPEG XL libjxl - JPEG - 5 (MP/s)** | **70.23** | 70.05 | **69.97** | 70.02 |
| **Normalized** | 100% | 99.74% | 99.63% | 99.7% |
| **JPEG XL libjxl - JPEG - 7 (MP/s)** | **70.25** | **69.13** | 69.94 | 69.85 |
| **Normalized** | 100% | 98.41% | 99.56% | 99.43% |

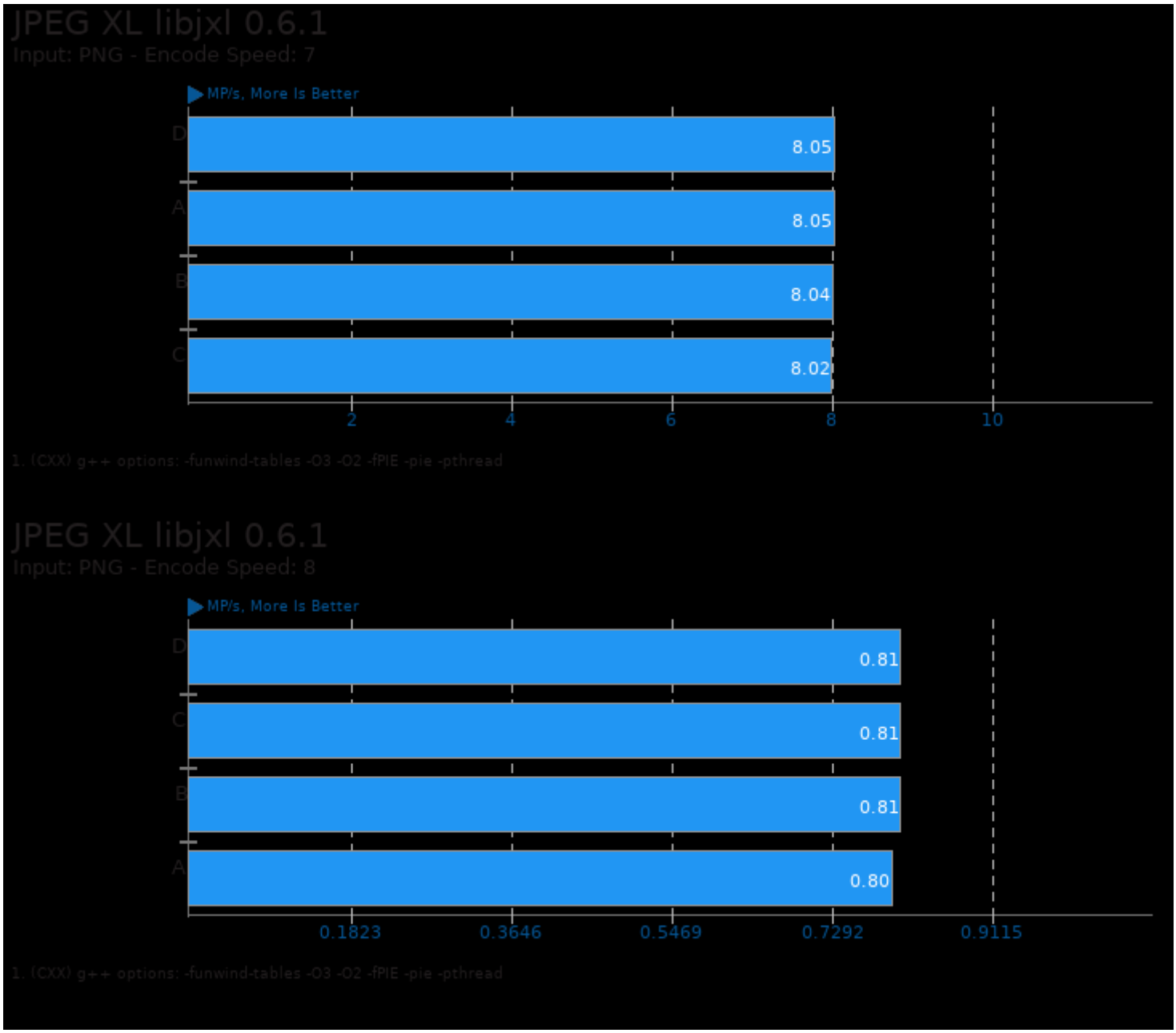
# 8700K December

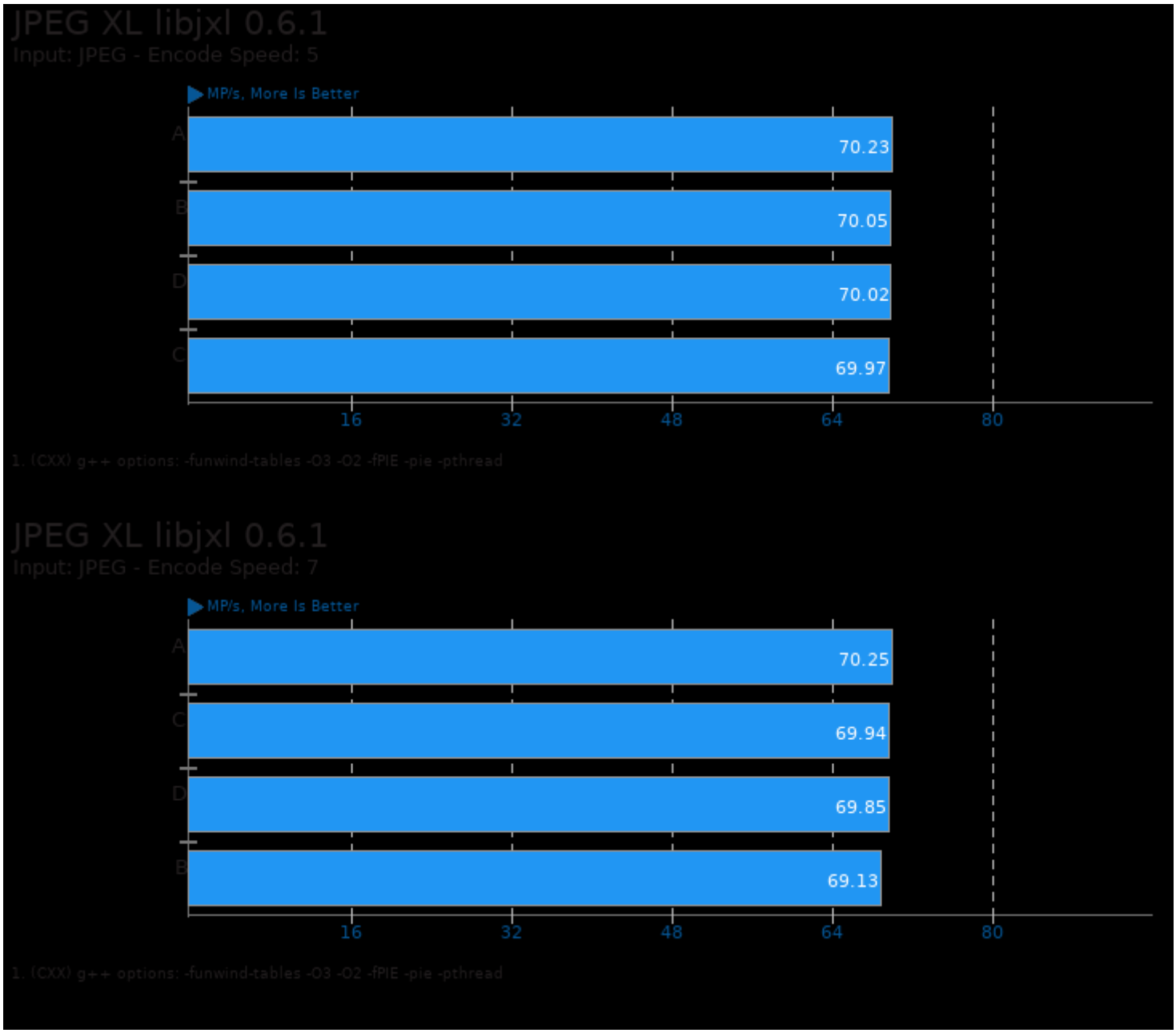
| | | | | |
|---|---|---|---|---|
| **JPEG XL libjxl - JPEG - 8 (MP/s)** | 27.81 | **27.99** | 27.7 | **27.68** |
| **Normalized** | 99.36% | 100% | 98.96% | 98.89% |
| **JPEG XL Decoding libjxl - 1 (MP/s)** | 54.98 | **55.54** | **54.76** | 55.01 |
| **Normalized** | 98.99% | 100% | 98.6% | 99.05% |
| **JPEG XL Decoding libjxl - All (MP/s)** | **237.11** | 236.01 | 235.47 | **235.11** |
| **Normalized** | 100% | 99.54% | 99.31% | 99.16% |
| **rav1e - 1 (FPS)** | **0.366** | 0.377 | 0.376 | **0.38** |
| **Normalized** | 96.32% | 99.21% | 98.95% | 100% |
| **rav1e - 5 (FPS)** | 2.042 | **2.014** | 2.037 | **2.054** |
| **Normalized** | 99.42% | 98.05% | 99.17% | 100% |
| **rav1e - 6 (FPS)** | 2.691 | 2.668 | **2.642** | **2.7** |
| **Normalized** | 99.67% | 98.81% | 97.85% | 100% |
| **rav1e - 10 (FPS)** | **7.43** | **7.527** | 7.431 | 7.469 |
| **Normalized** | 98.71% | 100% | 98.72% | 99.23% |
| **7-Zip Compression - Compression Rating (MIPS)** | **49095** | **50557** | 50532 | 50049 |
| **Normalized** | 97.11% | 100% | 99.95% | 99% |
| **7-Zip Compression - D.R (MIPS)** | **38993** | 38979 | 38989 | **38689** |
| **Normalized** | 100% | 99.96% | 99.99% | 99.22% |
| **Stargate Digital Audio Workstation - 44100 - 512 (Render Ratio)** | **2.200899** | 2.20392 | **2.20425** | 2.20346 |
| **Normalized** | 99.85% | 99.99% | 100% | 99.96% |
| **Stargate Digital Audio Workstation - 96000 - 512 (Render Ratio)** | 1.620176 | **1.609067** | **1.621247** | 1.617727 |
| **Normalized** | 99.93% | 99.25% | 100% | 99.78% |
| **Stargate Digital Audio Workstation - 192000 - 512 (Render Ratio)** | **1.100698** | 1.104526 | 1.10442 | **1.104991** |
| **Normalized** | 99.61% | 99.96% | 99.95% | 100% |
| **Stargate Digital Audio Workstation - 44100 - 1024 (Render Ratio)** | **2.254592** | **2.265715** | 2.260456 | 2.258988 |
| **Normalized** | 99.51% | 100% | 99.77% | 99.7% |
| **Stargate Digital Audio Workstation - 480000 - 512 (Render Ratio)** | **2.130057** | 2.125463 | **2.122684** | 2.123809 |
| **Normalized** | 100% | 99.78% | 99.65% | 99.71% |
| **Stargate Digital Audio Workstation - 96000 - 1024 (Render Ratio)** | **1.675846** | 1.67371 | 1.674918 | **1.673699** |
| **Normalized** | 100% | 99.87% | 99.94% | 99.87% |
| **Stargate Digital Audio Workstation - 192000 - 1024 (Render Ratio)** | 1.148881 | **1.151489** | **1.142873** | 1.149718 |
| **Normalized** | 99.77% | 100% | 99.25% | 99.85% |
| **Stargate Digital Audio Workstation - 480000 - 1024 (Render Ratio)** | 2.180235 | **2.186418** | 2.184365 | **2.179224** |
| **Normalized** | 99.72% | 100% | 99.91% | 99.67% |
| **Primesieve - 1.P.N.G (sec)** | 32.452 | **32.664** | 32.567 | **32.334** |
| **Normalized** | 99.64% | 98.99% | 99.28% | 100% |
| **Apache CouchDB - 100 - 1000 - 24** | 109.178 | **105.591** | 107.027 | **111.801** |
| **Normalized** | 96.71% | 100% | 98.66% | 94.45% |
| **Blender - BMW27 - CPU-Only (sec)** | 207.45 | 207.51 | **207.21** | **207.68** |
| **Normalized** | 99.88% | 99.86% | 100% | 99.77% |
| **Blender - Classroom - CPU-Only (sec)** | **572.52** | 576.06 | 576.71 | **576.72** |
| **Normalized** | 100% | 99.39% | 99.27% | 99.27% |
| **Blender - Fishy Cat - CPU-Only (sec)** | **287.46** | 288.91 | 288.55 | **289.43** |

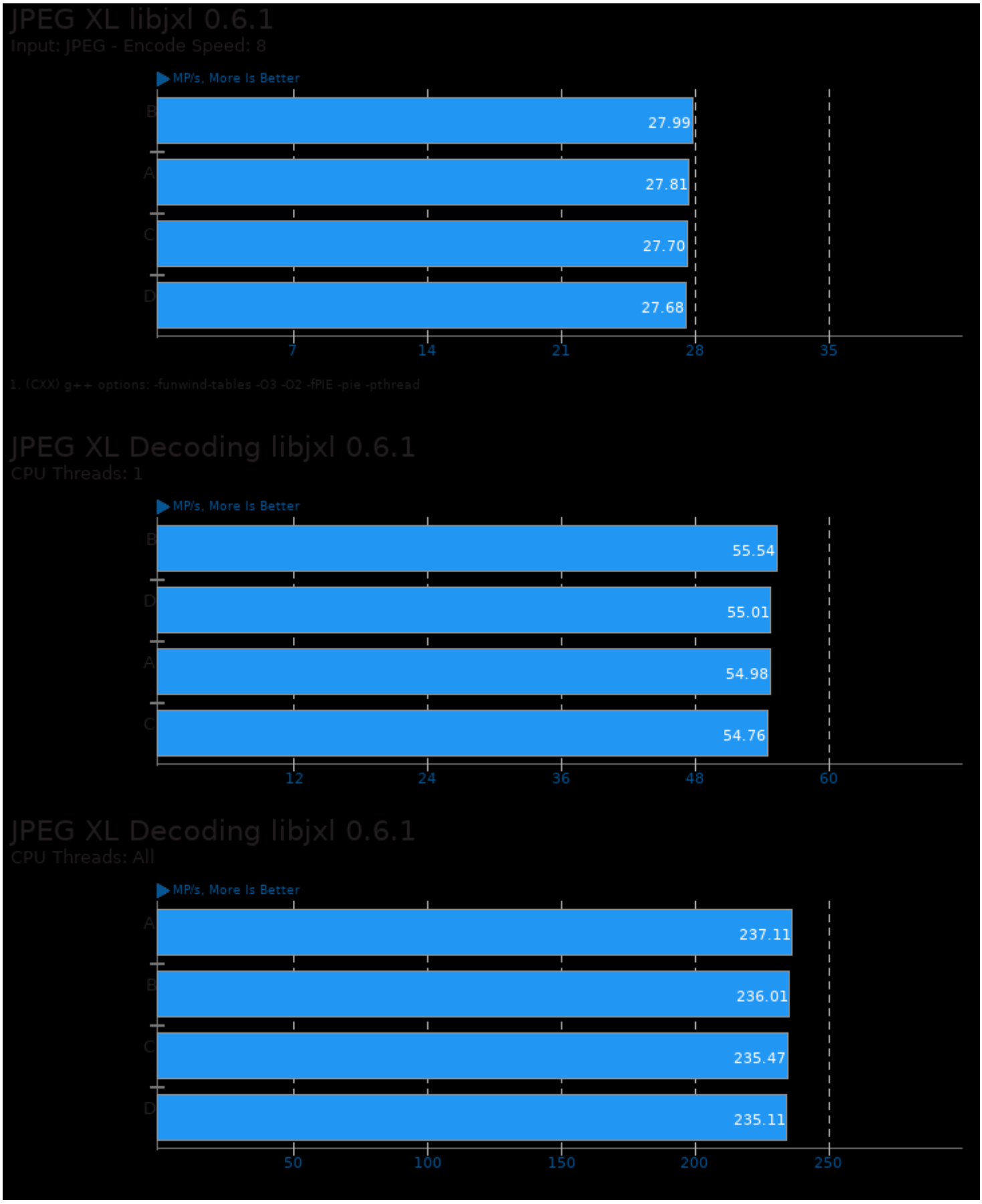
# 8700K December

| | | | | |
|---|---|---|---|---|
| **Normalized** | 100% | 99.5% | 99.62% | 99.32% |
| **Blender - Barbershop - CPU-Only** | 2266 | **2270** | 2265 | **2259** |
| **Normalized** | 99.68% | 99.54% | 99.76% | 100% |
| **Blender - Pabellon Barcelona - CPU-Only (sec)** | **723.31** | 722.52 | **720.7** | |
| **Normalized** | 99.64% | 99.75% | 100% | |
| **GnuPG - 2.7.S.F.E (sec)** | **68.571** | **65.989** | 66.564 | |
| **Normalized** | 96.23% | 100% | 99.14% | |

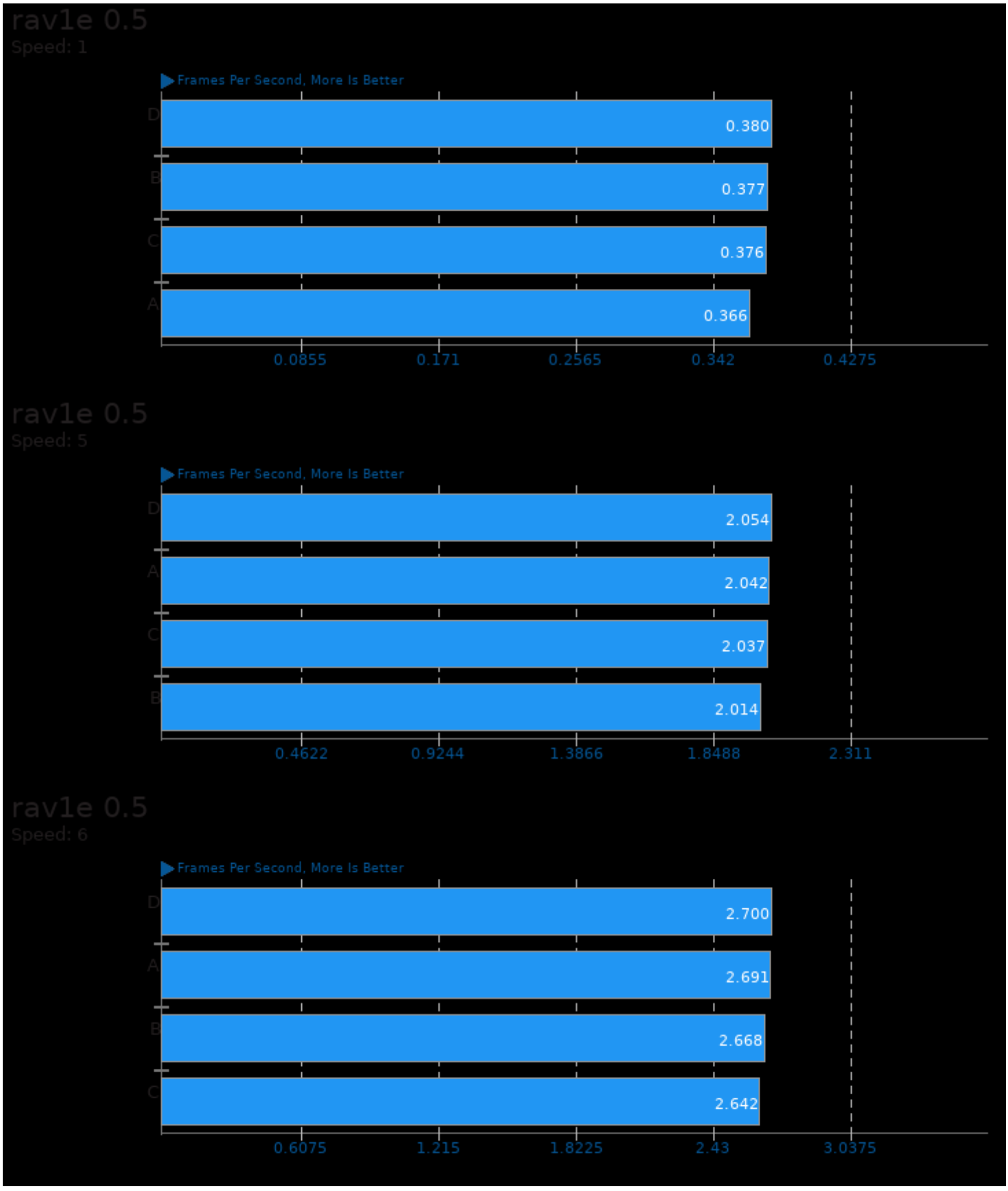

BLAKE2 20170307
Cycles Per Byte, Fewer Is Better
C
4.53
A
4.54
B
4.54
D
4.54
1.0215
2.043
3.0645
4.086
5.1075
1. (CC) gcc options: -O3 -march=native -lcrypto -lz
JPEG XL libjxl 0.6.1
Input: PNG - Encode Speed: 5
MP/s, More Is Better
A
31.69
C
31.51
D
31.41
B
31.31
7
14
21
28
35
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread


JPEG XL libjxl 0.6.1
Input: PNG - Encode Speed: 7
MP/s, More Is Better
D
A
B
C
8.05
8.05
8.04
8.02
2
4
6
8
10
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread
JPEG XL libjxl 0.6.1
Input: PNG - Encode Speed: 8
MP/s, More Is Better
D
C
B
A
0.81
0.81
0.81
0.80
0.1823
0.3646
0.5469
0.7292
0.9115
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread


JPEG XL libjxl 0.6.1
Input: JPEG - Encode Speed: 5
MP/s, More Is Better
A
B
D
C
70.23
70.05
70.02
69.97
16
32
48
64
80
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread
JPEG XL libjxl 0.6.1
Input: JPEG - Encode Speed: 7
MP/s, More Is Better
A
C
D
B
70.25
69.94
69.85
69.13
16
32
48
64
80
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread

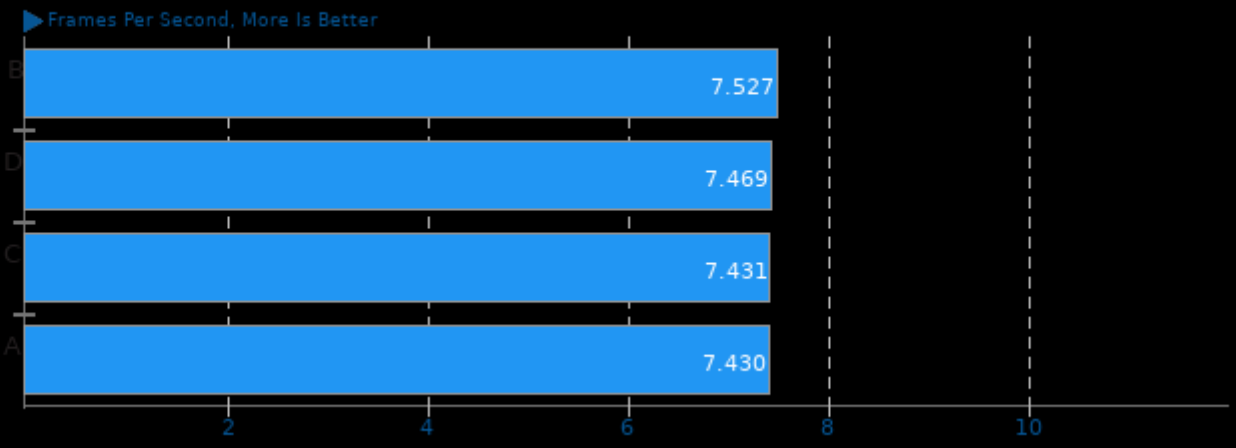

JPEG XL libjxl 0.6.1
Input: JPEG - Encode Speed: 8
MP/s, More Is Better
B
A
C
D
27.99
27.81
27.70
27.68
7
14
21
28
35
1. (CXX) g++ options: -funwind-tables -O3 -O2 -fPIE -pie -pthread
JPEG XL Decoding libjxl 0.6.1
CPU Threads: 1
MP/s, More Is Better
B
D
A
C
55.54
55.01
54.98
54.76
12
24
36
48
60
JPEG XL Decoding libjxl 0.6.1
CPU Threads: All
MP/s, More Is Better
A
B
C
D
237.11
236.01
235.47
235.11
50
100
150
200
250

# 8700K December



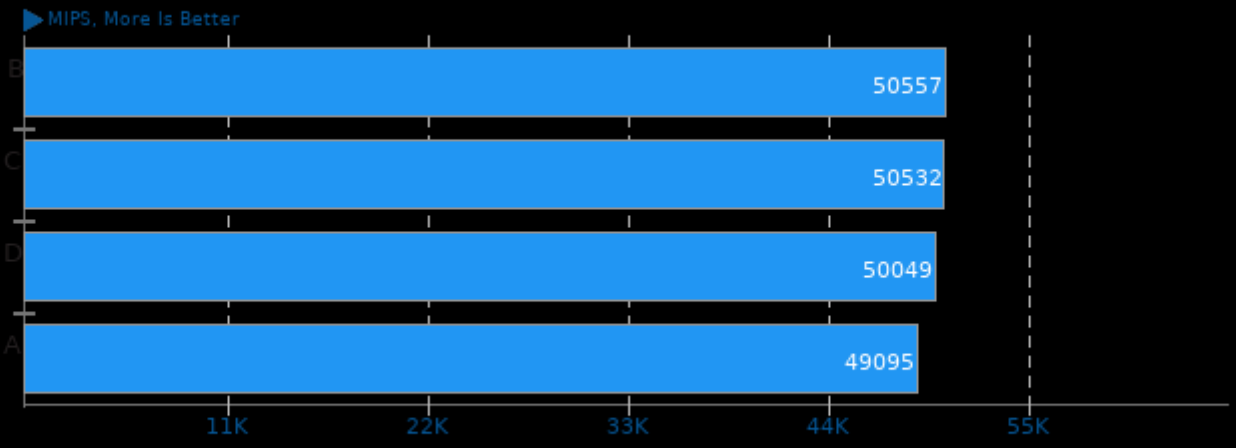
## rav1e 0.5

Speed: 10




## 7-Zip Compression 21.06

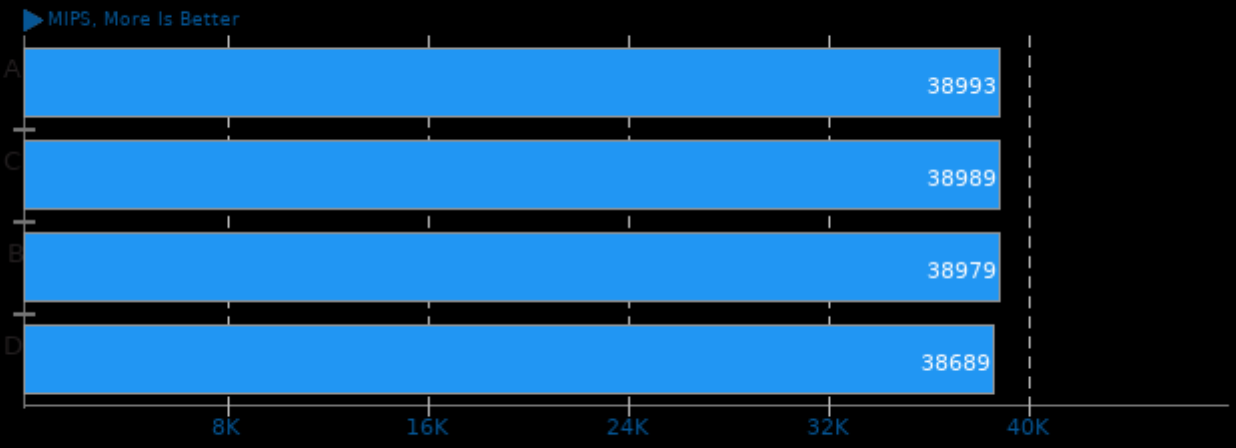
Test: Compression Rating



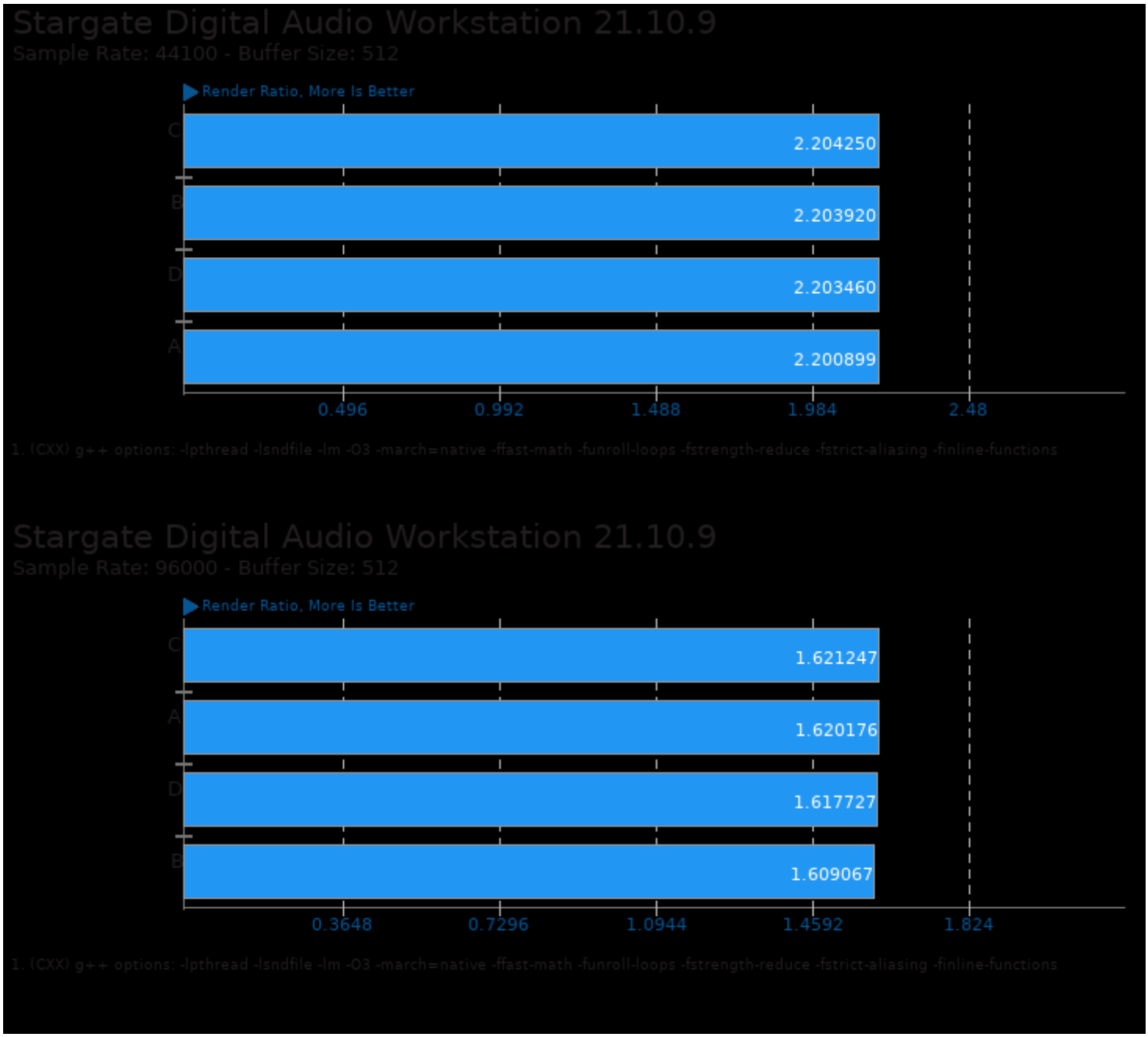

1. (CXX) g++ options: -lpthread -ldl -O2 -fPIC

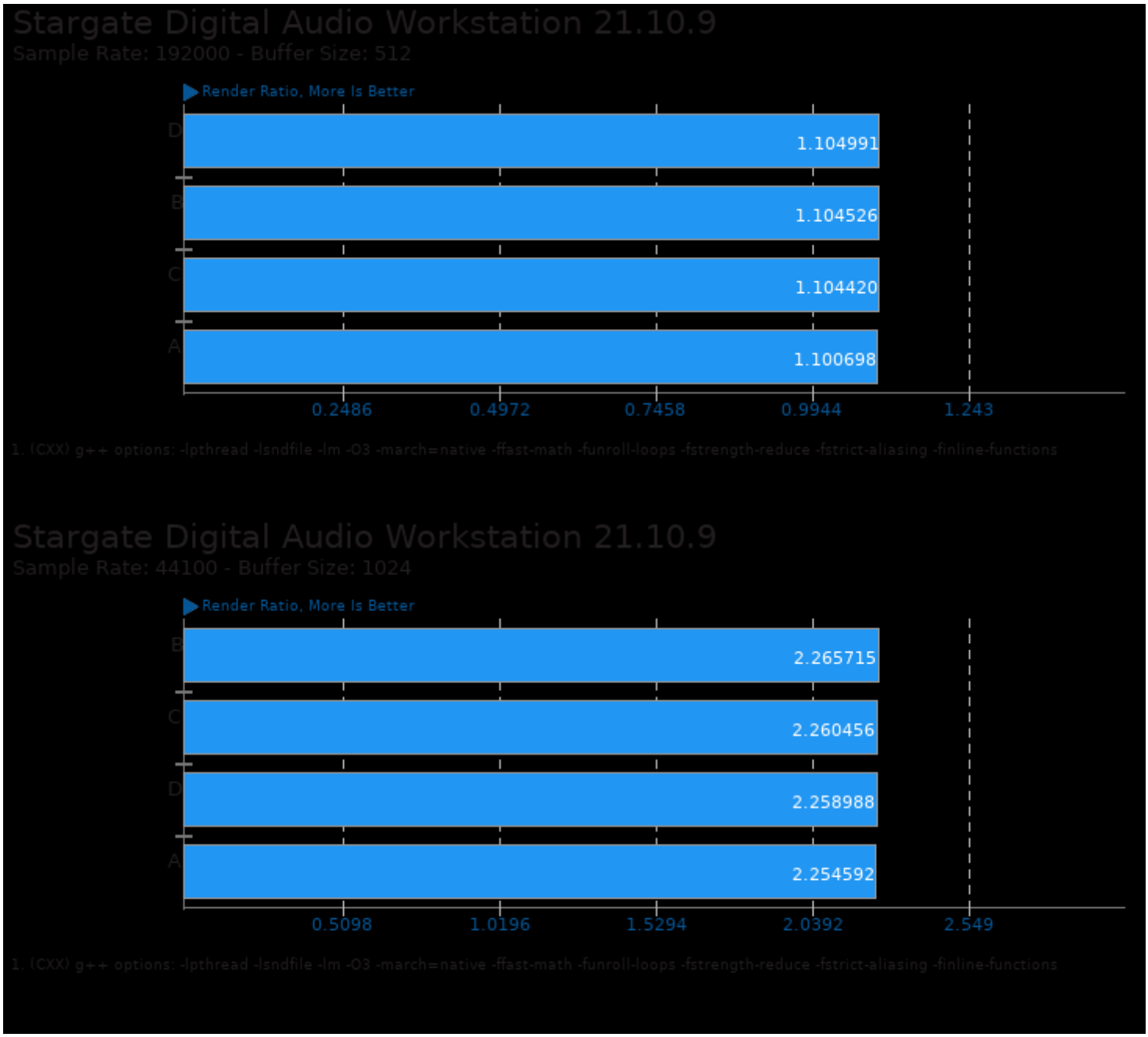
## 7-Zip Compression 21.06

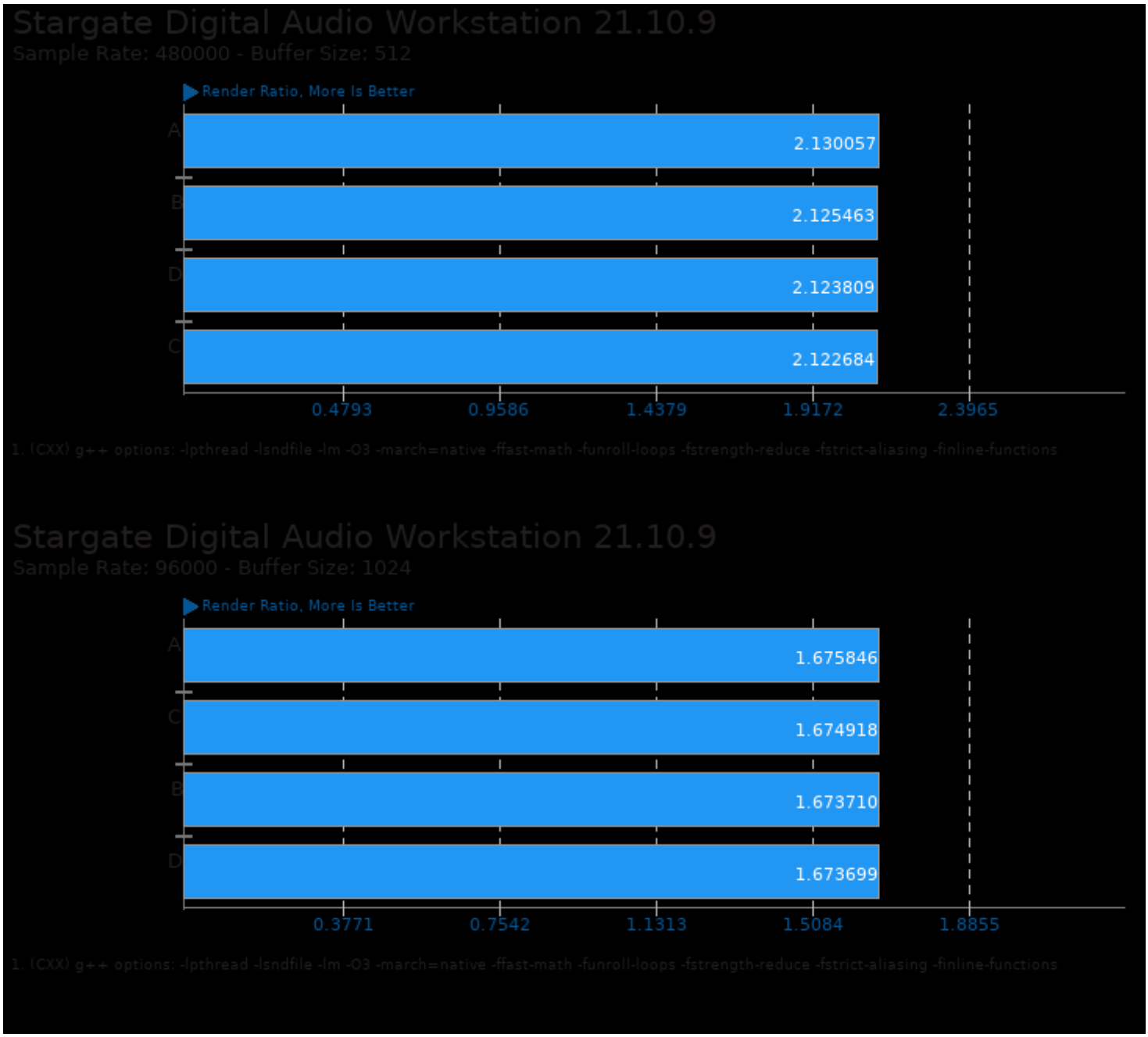
Test: Decompression Rating

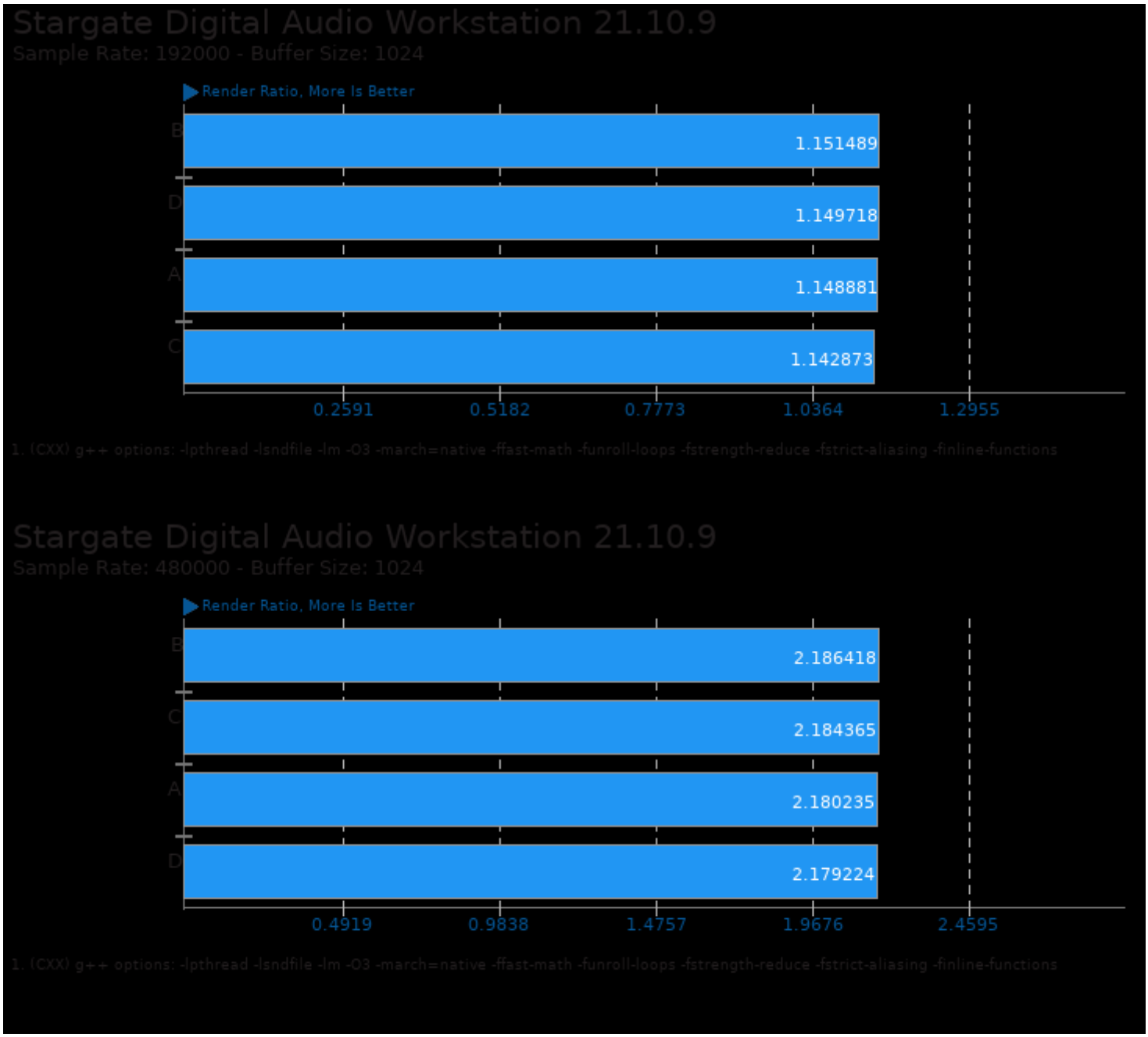



1. (CXX) g++ options: -lpthread -ldl -O2 -fPIC


Stargate Digital Audio Workstation 21.10.9
Sample Rate: 44100 - Buffer Size: 512
Render Ratio, More Is Better
C
2.204250
B
2.203920
D
2.203460
A
2.200899
0.496
0.992
1.488
1.984
2.48
1. (CXX) g++ options: -lpthread -lsndfile -lm -O3 -march=native -ffast-math -funroll-loops -fstrength-reduce -fstrict-aliasing -finline-functions
Stargate Digital Audio Workstation 21.10.9
Sample Rate: 96000 - Buffer Size: 512
Render Ratio, More Is Better
C
1.621247
A
1.620176
D
1.617727
B
1.609067
0.3648
0.7296
1.0944
1.4592
1.824
1. (CXX) g++ options: -lpthread -lsndfile -lm -O3 -march=native -ffast-math -funroll-loops -fstrength-reduce -fstrict-aliasing -finline-functions

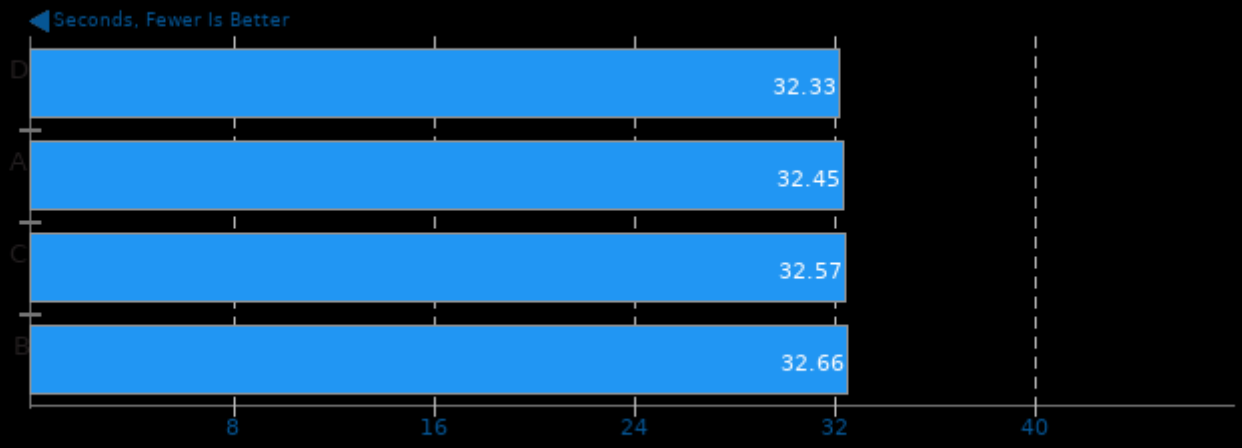

Stargate Digital Audio Workstation 21.10.9
Sample Rate: 192000 - Buffer Size: 512
Render Ratio, More Is Better
D
1.104991
B
1.104526
C
1.104420
A
1.100698
0.2486
0.4972
0.7458
0.9944
1.243
1. (CXX) g++ options: -lpthread -lsndfile -lm -O3 -march=native -ffast-math -funroll-loops -fstrength-reduce -fstrict-aliasing -finline-functions
Stargate Digital Audio Workstation 21.10.9
Sample Rate: 44100 - Buffer Size: 1024
Render Ratio, More Is Better
B
2.265715
C
2.260456
D
2.258988
A
2.254592
0.5098
1.0196
1.5294
2.0392
2.549
1. (CXX) g++ options: -lpthread -lsndfile -lm -O3 -march=native -ffast-math -funroll-loops -fstrength-reduce -fstrict-aliasing -finline-functions


Stargate Digital Audio Workstation 21.10.9
Sample Rate: 480000 - Buffer Size: 512
Render Ratio, More Is Better
A
2.130057
B
2.125463
D
2.123809
C
2.122684
0.4793
0.9586
1.4379
1.9172
2.3965
1. (CXX) g++ options: -lpthread -lsndfile -lm -O3 -march=native -ffast-math -funroll-loops -fstrength-reduce -fstrict-aliasing -finline-functions
Stargate Digital Audio Workstation 21.10.9
Sample Rate: 96000 - Buffer Size: 1024
Render Ratio, More Is Better
A
1.675846
C
1.674918
B
1.673710
D
1.673699
0.3771
0.7542
1.1313
1.5084
1.8855
1. (CXX) g++ options: -lpthread -lsndfile -lm -O3 -march=native -ffast-math -funroll-loops -fstrength-reduce -fstrict-aliasing -finline-functions


Stargate Digital Audio Workstation 21.10.9
Sample Rate: 192000 - Buffer Size: 1024
Render Ratio, More Is Better
B
D
A
C
1.151489
1.149718
1.148881
1.142873
0.2591
0.5182
0.7773
1.0364
1.2955
1. (CXX) g++ options: -lpthread -lsndfile -lm -O3 -march=native -ffast-math -funroll-loops -fstrength-reduce -fstrict-aliasing -finline-functions
Stargate Digital Audio Workstation 21.10.9
Sample Rate: 480000 - Buffer Size: 1024
Render Ratio, More Is Better
B
C
A
D
2.186418
2.184365
2.180235
2.179224
0.4919
0.9838
1.4757
1.9676
2.4595
1. (CXX) g++ options: -lpthread -lsndfile -lm -O3 -march=native -ffast-math -funroll-loops -fstrength-reduce -fstrict-aliasing -finline-functions

## Primesieve 7.7

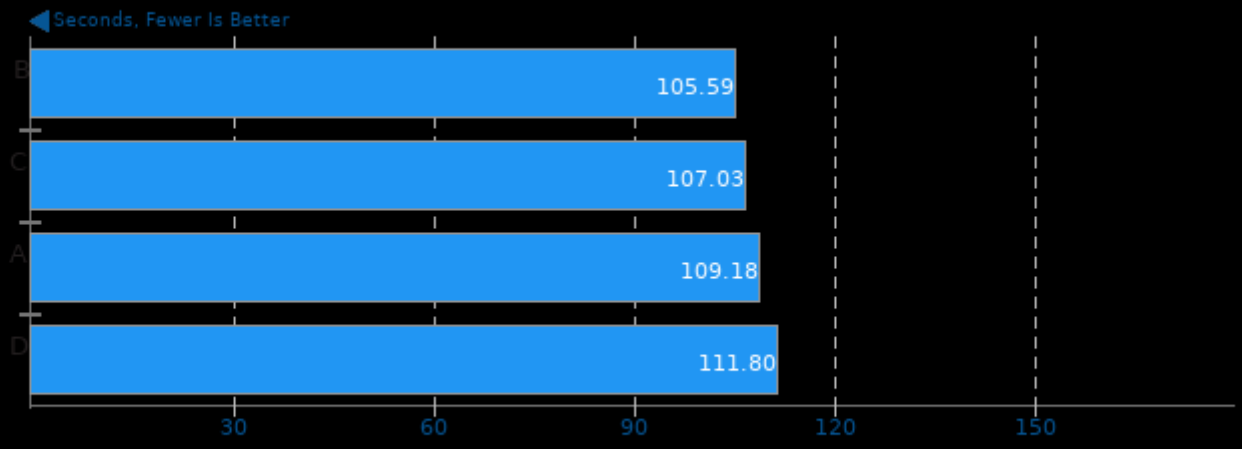
1e12 Prime Number Generation




1. (CXX) g++ options: -O3 -lpthread

## Apache CouchDB 3.2.1

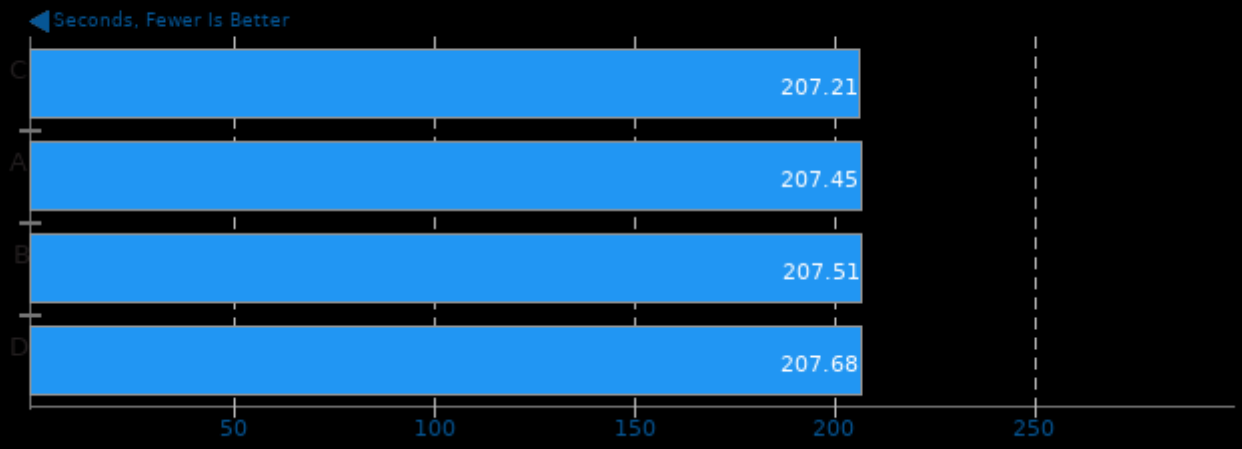
Bulk Size: 100 - Inserts: 1000 - Rounds: 24

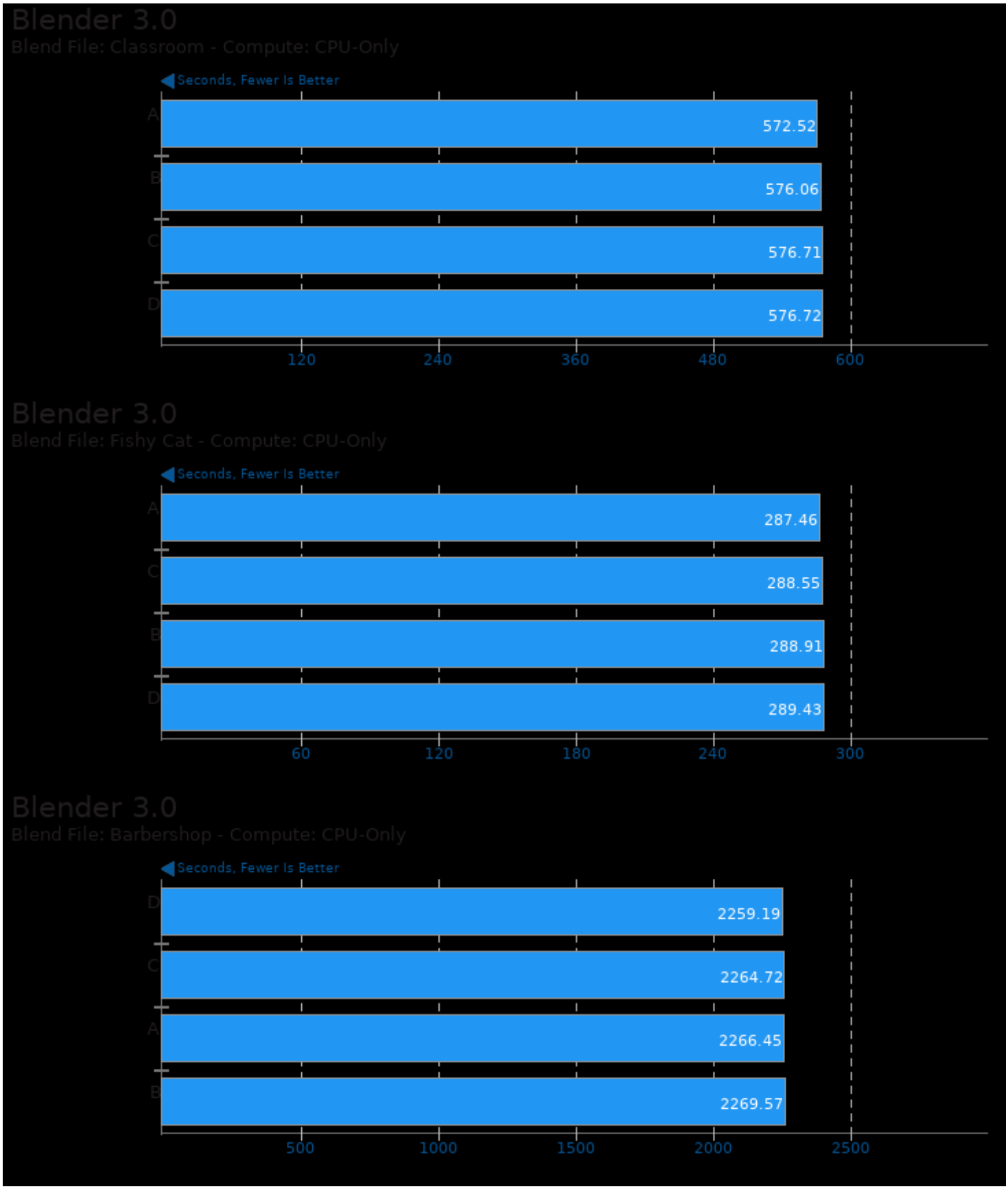



1. (CXX) g++ options: -std=c++14 -lmozjs-68 -lm -lei -fPIC -MMD

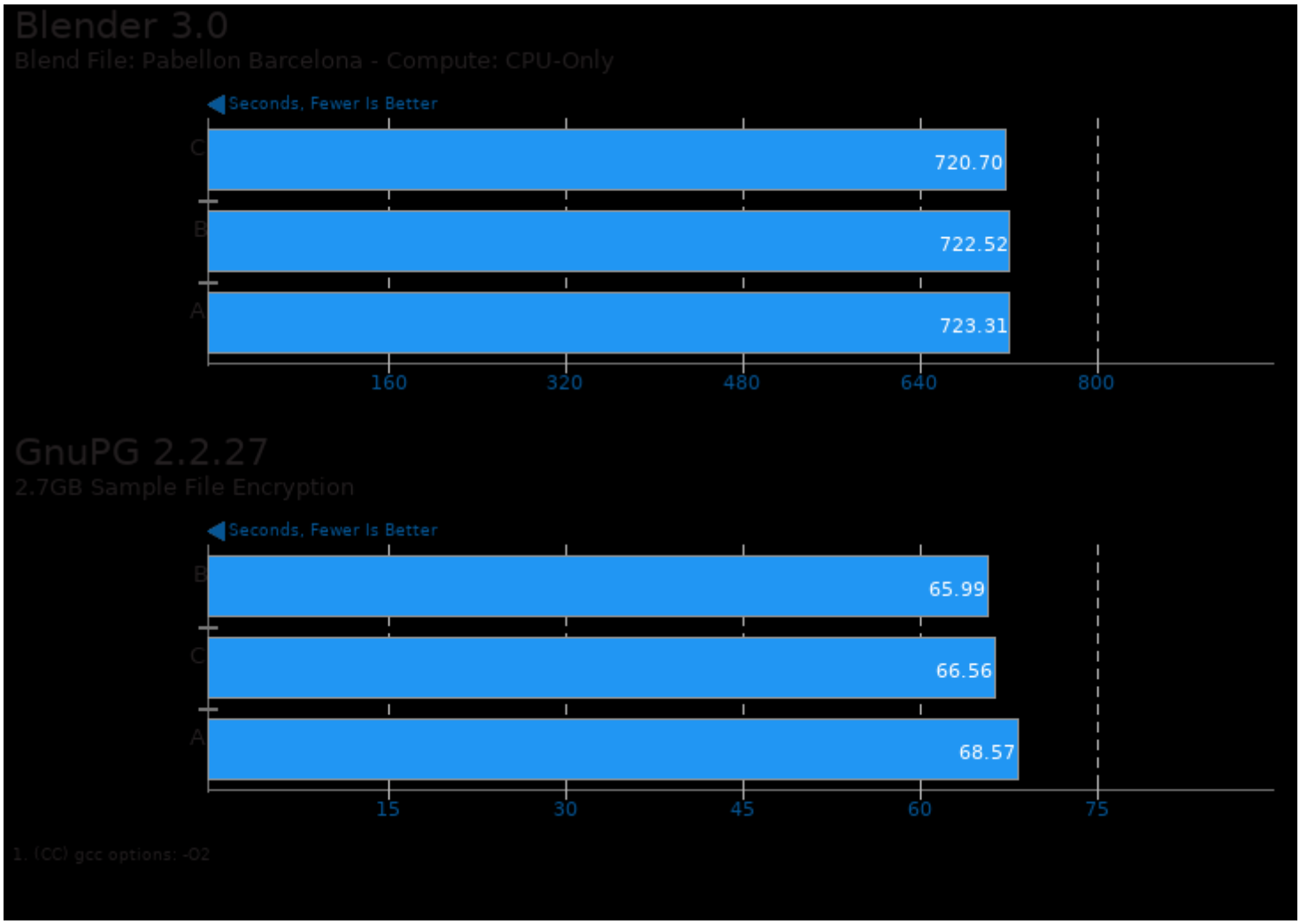
## Blender 3.0

Blend File: BMW27 - Compute: CPU-Only

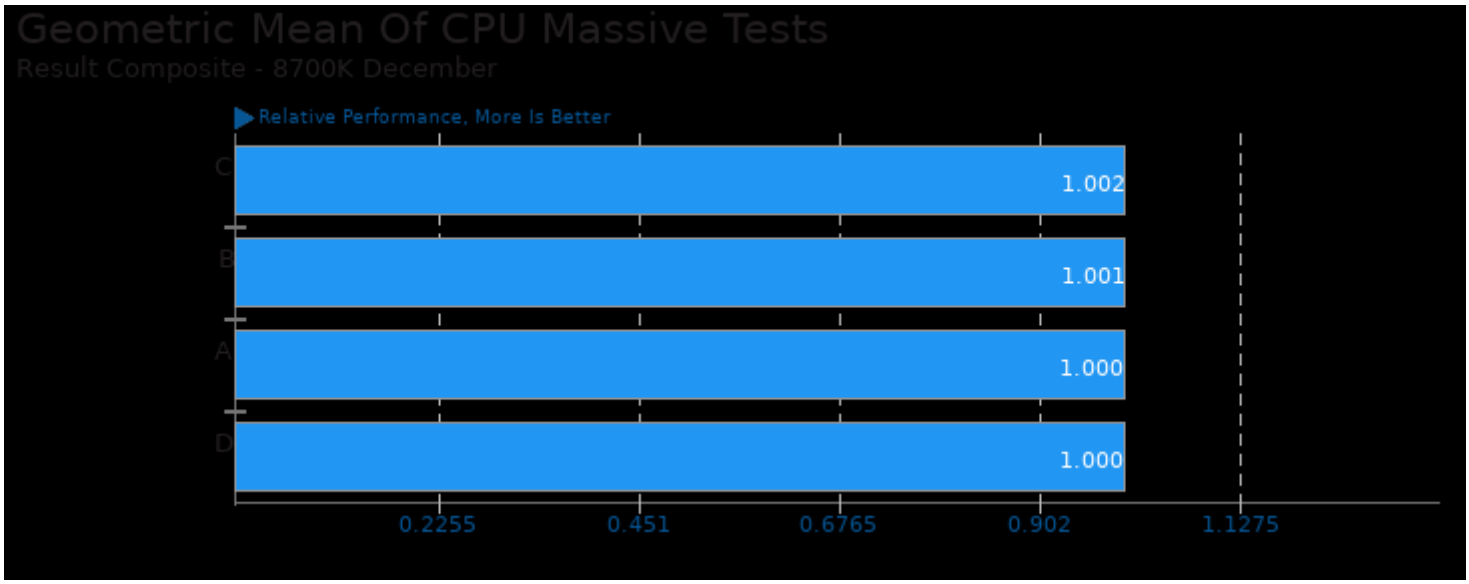



Blender 3.0
Blend File: Classroom - Compute: CPU-Only
Seconds, Fewer Is Better
A
572.52
B
576.06
C
576.71
D
576.72
120
240
360
480
600
Blender 3.0
Blend File: Fishy Cat - Compute: CPU-Only
Seconds, Fewer Is Better
A
287.46
C
288.55
B
288.91
D
289.43
60
120
180
240
300
Blender 3.0
Blend File: Barbershop - Compute: CPU-Only
Seconds, Fewer Is Better
D
2259.19
C
2264.72
A
2266.45
B
2269.57
500
1000
1500
2000
2500

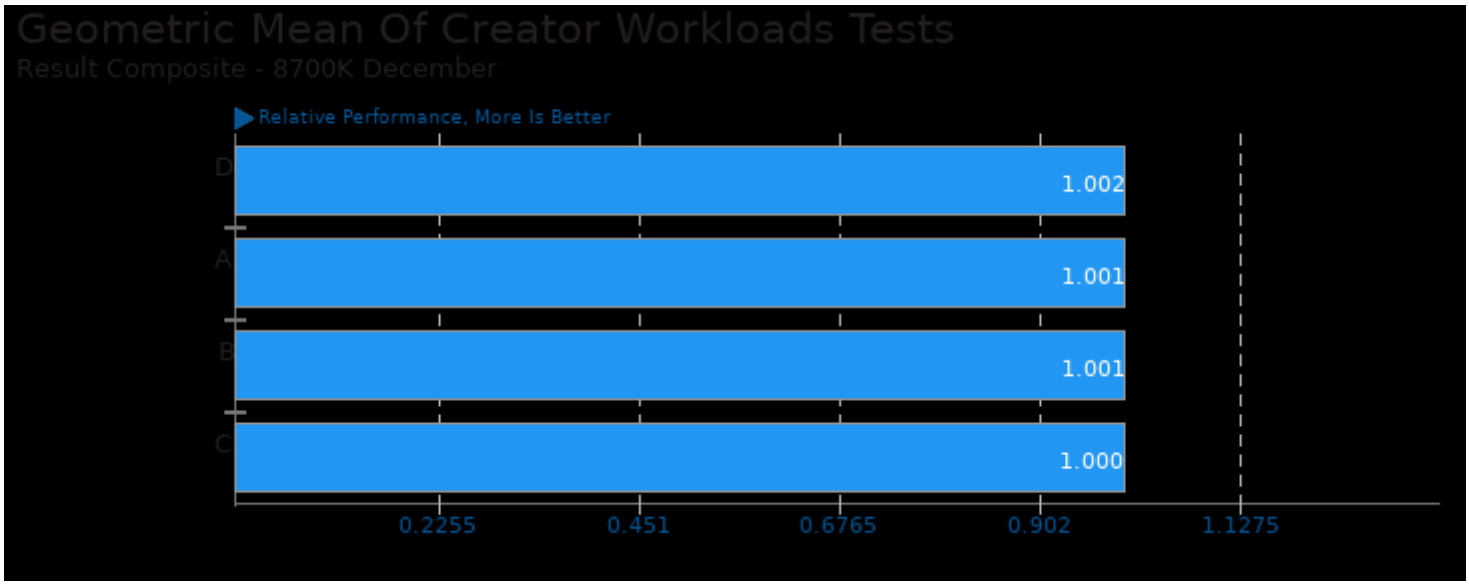
# 8700K December



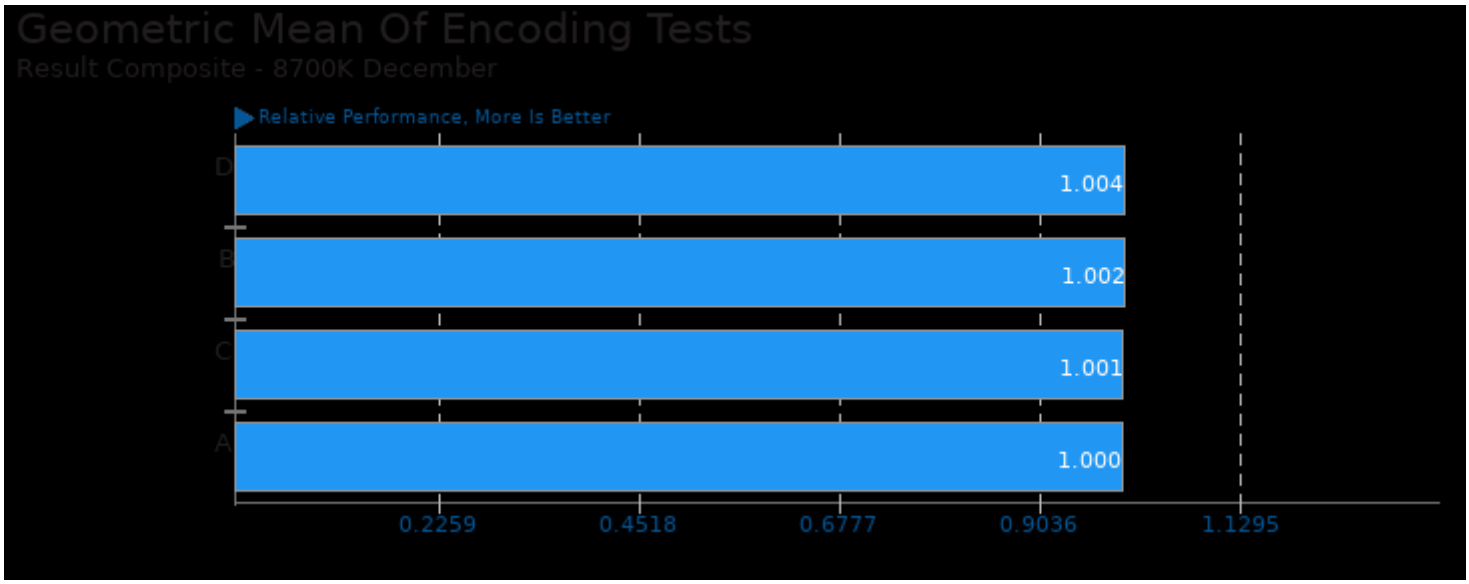
These geometric means are based upon test groupings / test suites for this result file.



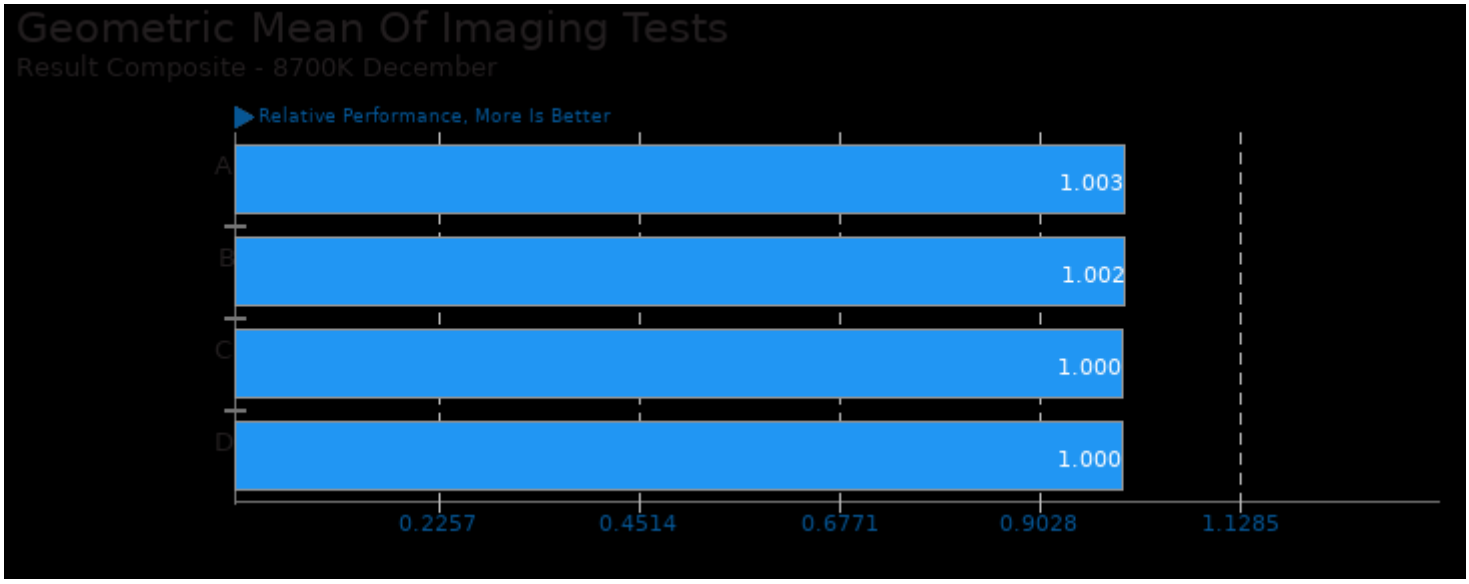

Geometric mean based upon tests: pts/blake2, pts/compress-7zip, pts/primesieve and pts/blender




Geometric mean based upon tests: pts/blender, pts/rav1e, pts/stargate, pts/jpegxl and pts/jpegxl-decode

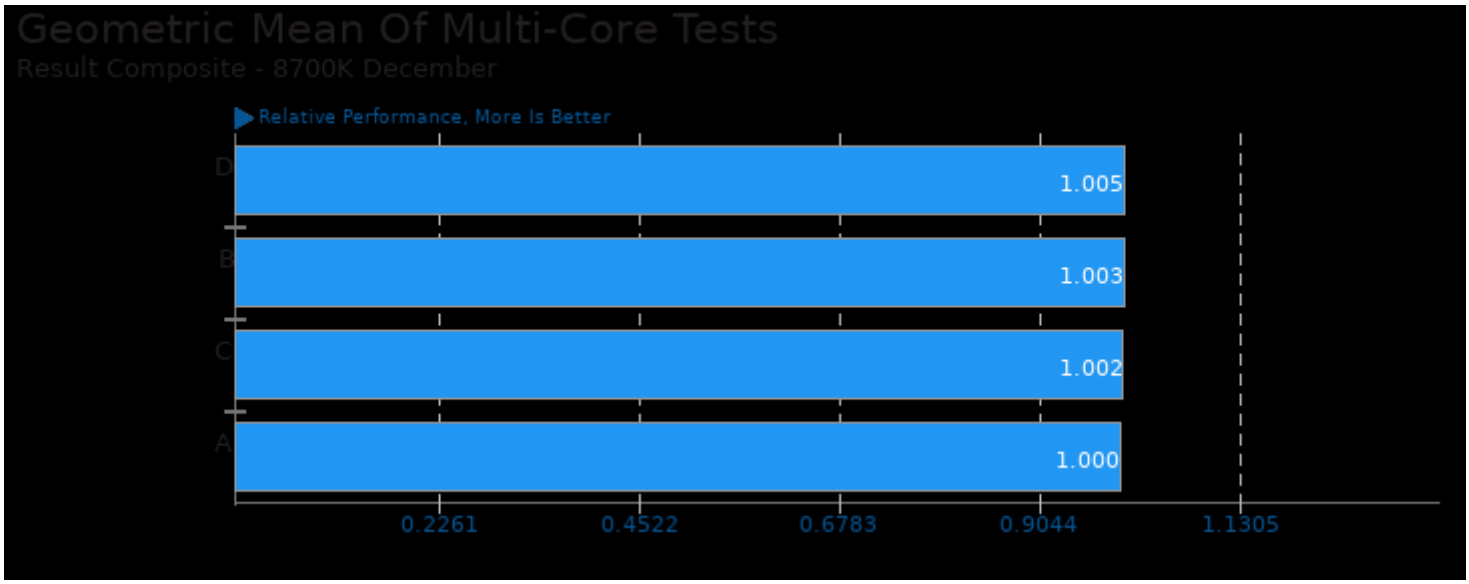



Geometric mean based upon tests: pts/stargate and pts/rav1e

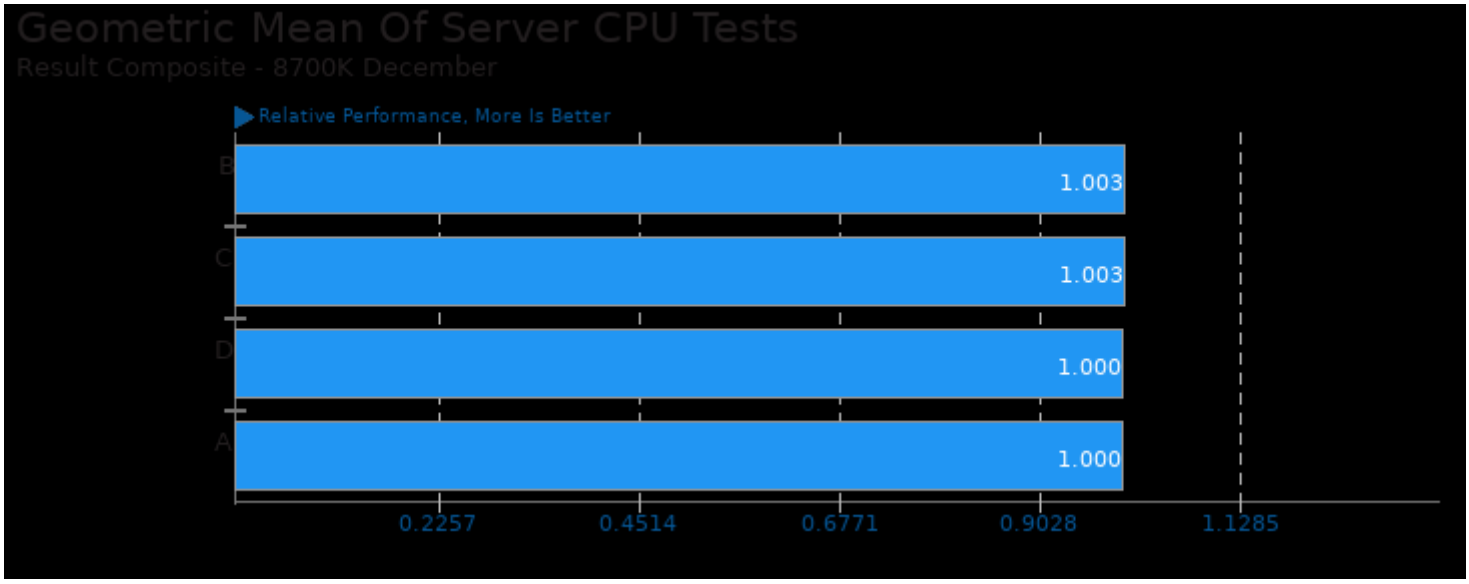



Geometric mean based upon tests: pts/jpegxl and pts/jpegxl-decode

# 8700K December




Geometric mean based upon tests: pts/blender, pts/rav1e, pts/primesieve and pts/compress-7zip




Geometric mean based upon tests: pts/compress-7zip and pts/blender

*This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 07:47.*